

# **Part 1:**

- a. Overview Optimization  
Guidance & Policy**
- b. Site Closeout Guidance**

# Optimization – What Does It Mean?



- Reaching response complete (RC) and site closeout (SC)
  - faster and more efficiently,
  - with reduced costs, and
  - better performing remedies
- How?
  - Upfront planning for life-cycle of the remedy
  - Iterative process, continual assessment, re-evaluation
  - Identifying improved or more appropriate remediation strategies
  - Controlling operating and monitoring (O&M) costs

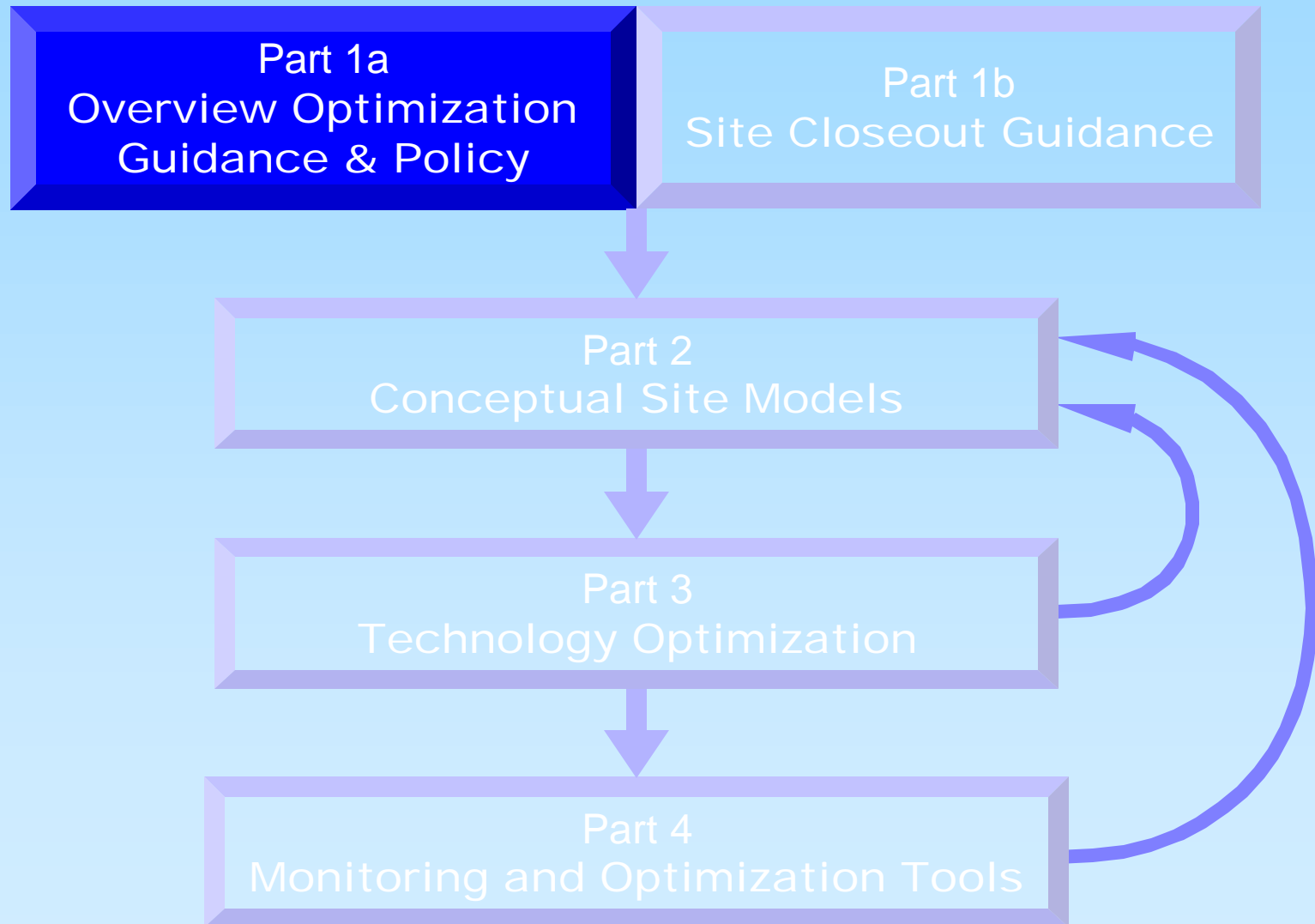
# Defense Environmental Restoration Program (DERP) Management Guidance – Optimization Requirements



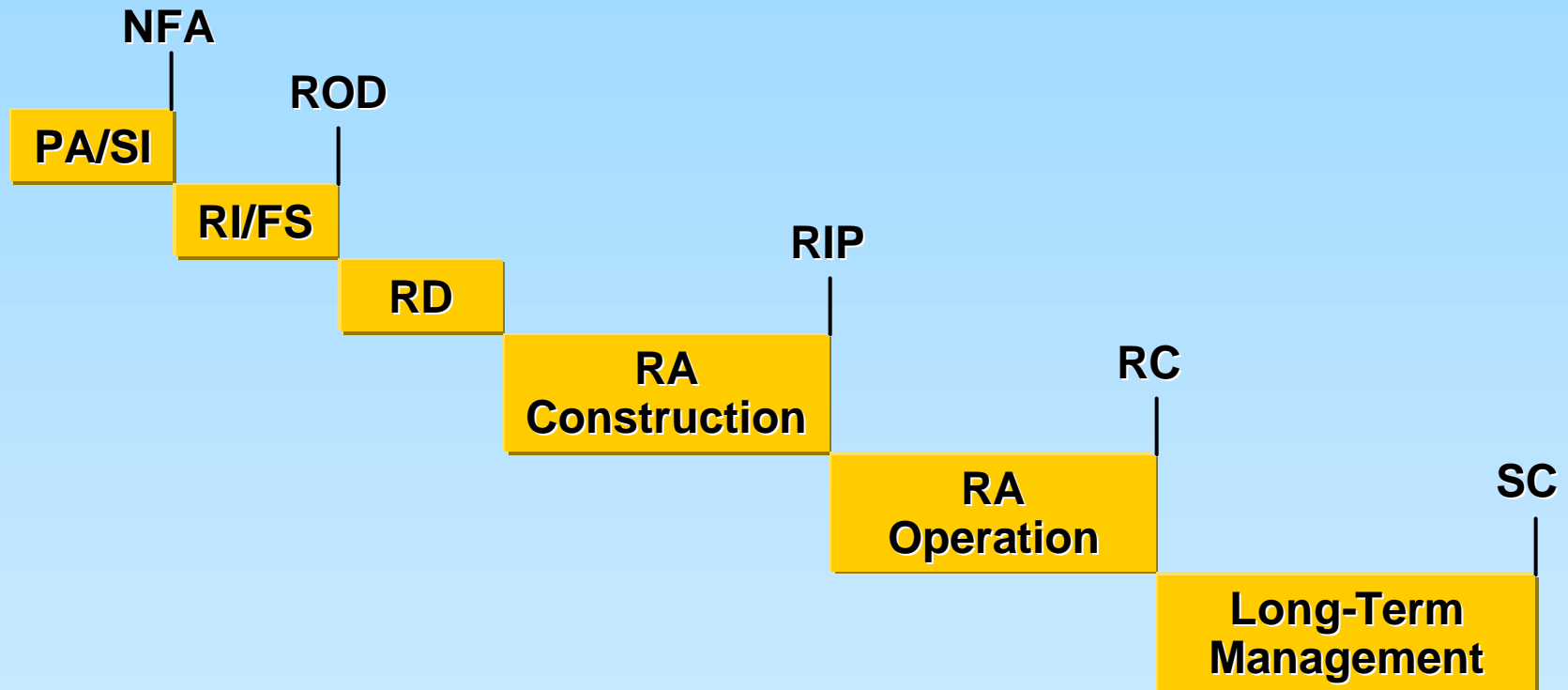
- September 2001, Section 20: DoD components to continually evaluate implemented remedies:
  - Optimize overall performance and effectiveness of the remedy
  - Control O&M costs during the remedial action operation (RAO) phase
  - Assess the need for further remediation at a site
  - Determine if a different remediation goal is needed
  - Determine if an alternative technology or approach is more appropriate
- Management guidance available from DENIX\*

\*Defense Environmental Network and Information Exchange

# RITS Spring 2004: Optimization of Remedial Actions



# Installation Restoration (IR) Program Phases



PA	preliminary assessment
SI	site investigation
NFA	no further action
RI	remedial investigation
FS	feasibility study
ROD	record of decision

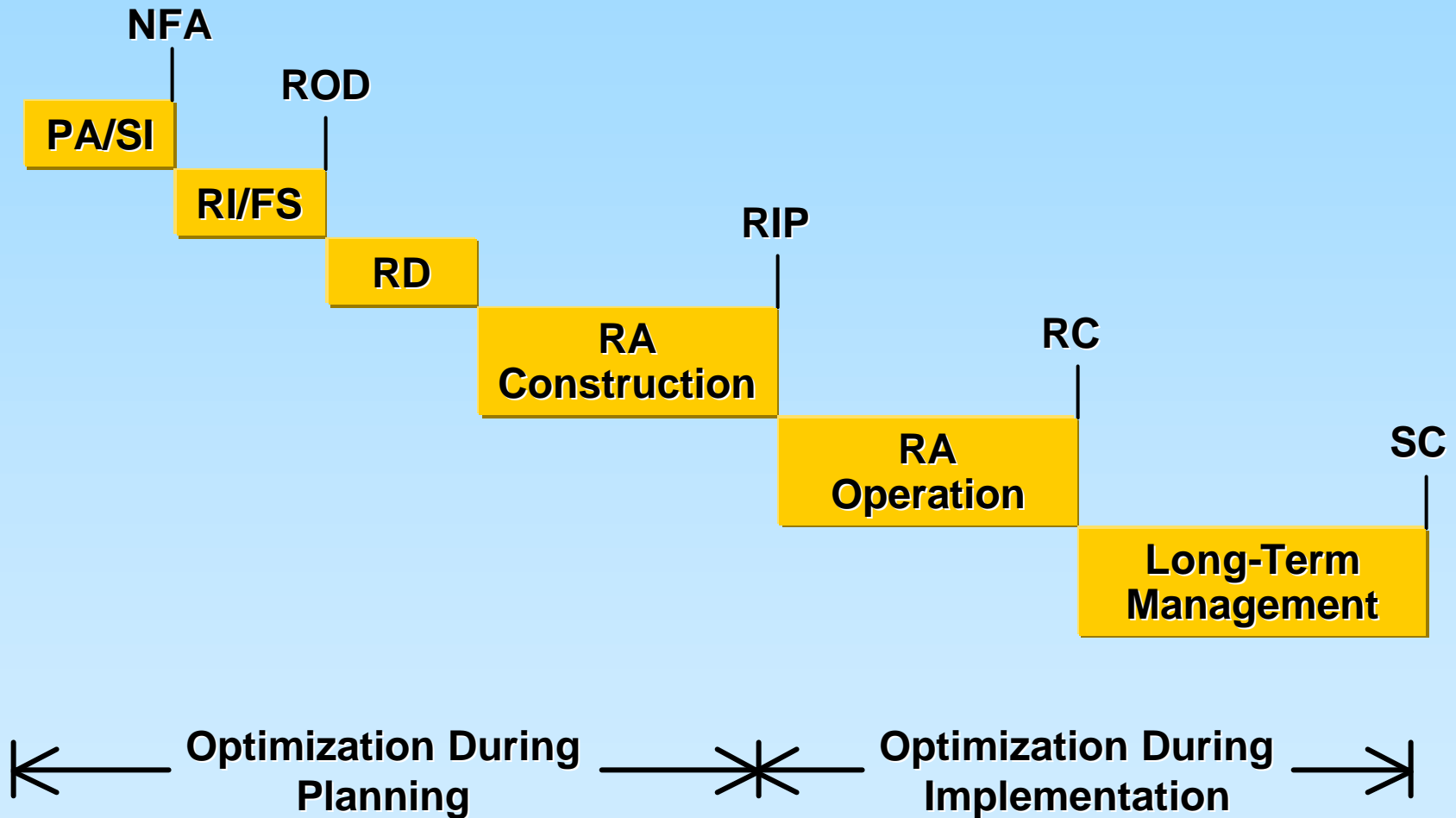
RD	remedial design
RA	remedial action
RIP	remedy in place
RC	response complete
SC	site closeout

# NAVFAC Goals



- Develop policy to require optimization of all response actions
- Develop guidance illustrating optimization approaches
- Track/report the effectiveness of optimization efforts for all sites
- Minimize/eliminate use of pump and treat (P&T)
- Develop Site Closeout Guidance with appropriate exit strategies
- Provide RPM training on these requirements

# IR Program Phases

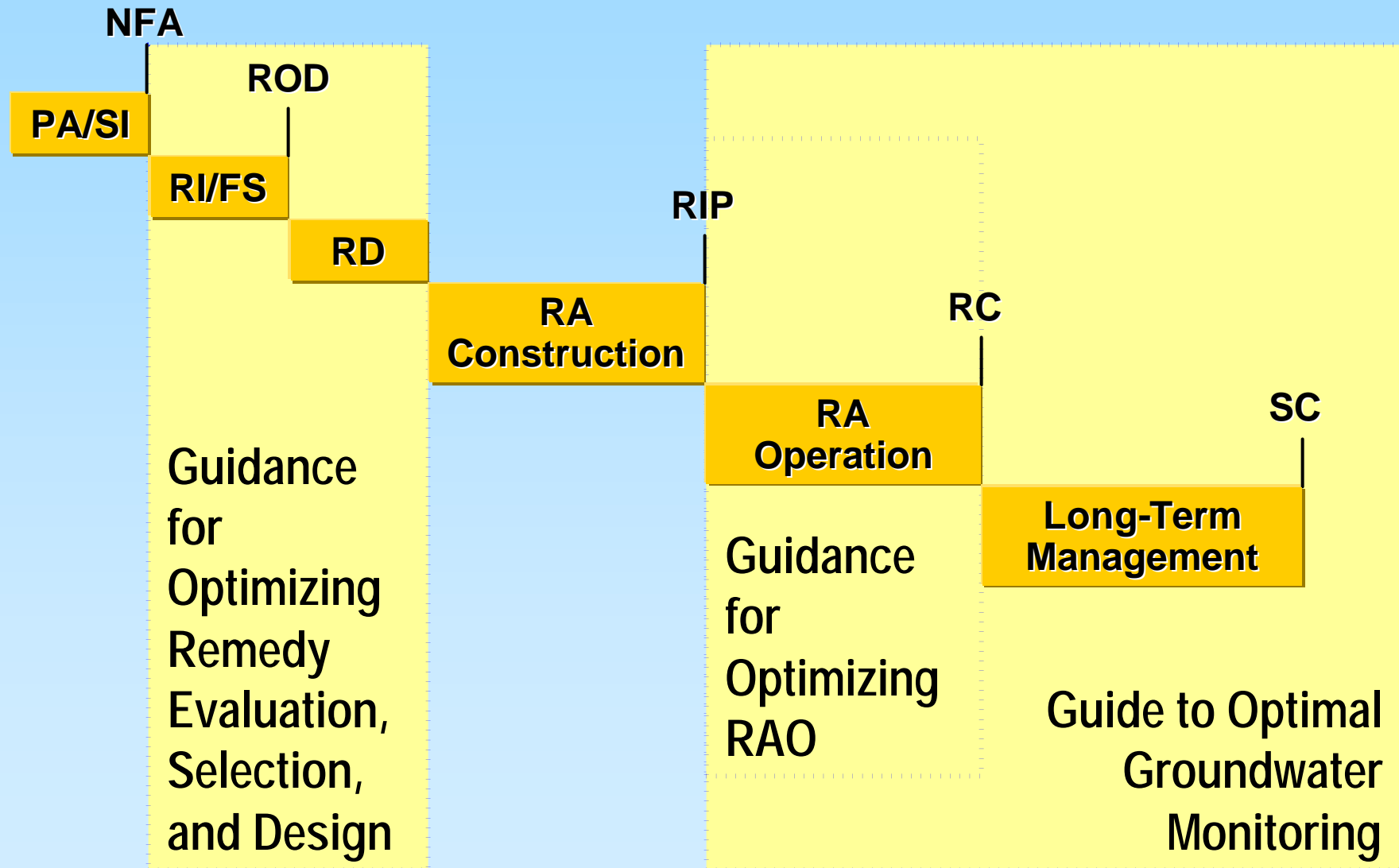


# DON Workgroup for RAO/LTMgt Optimization



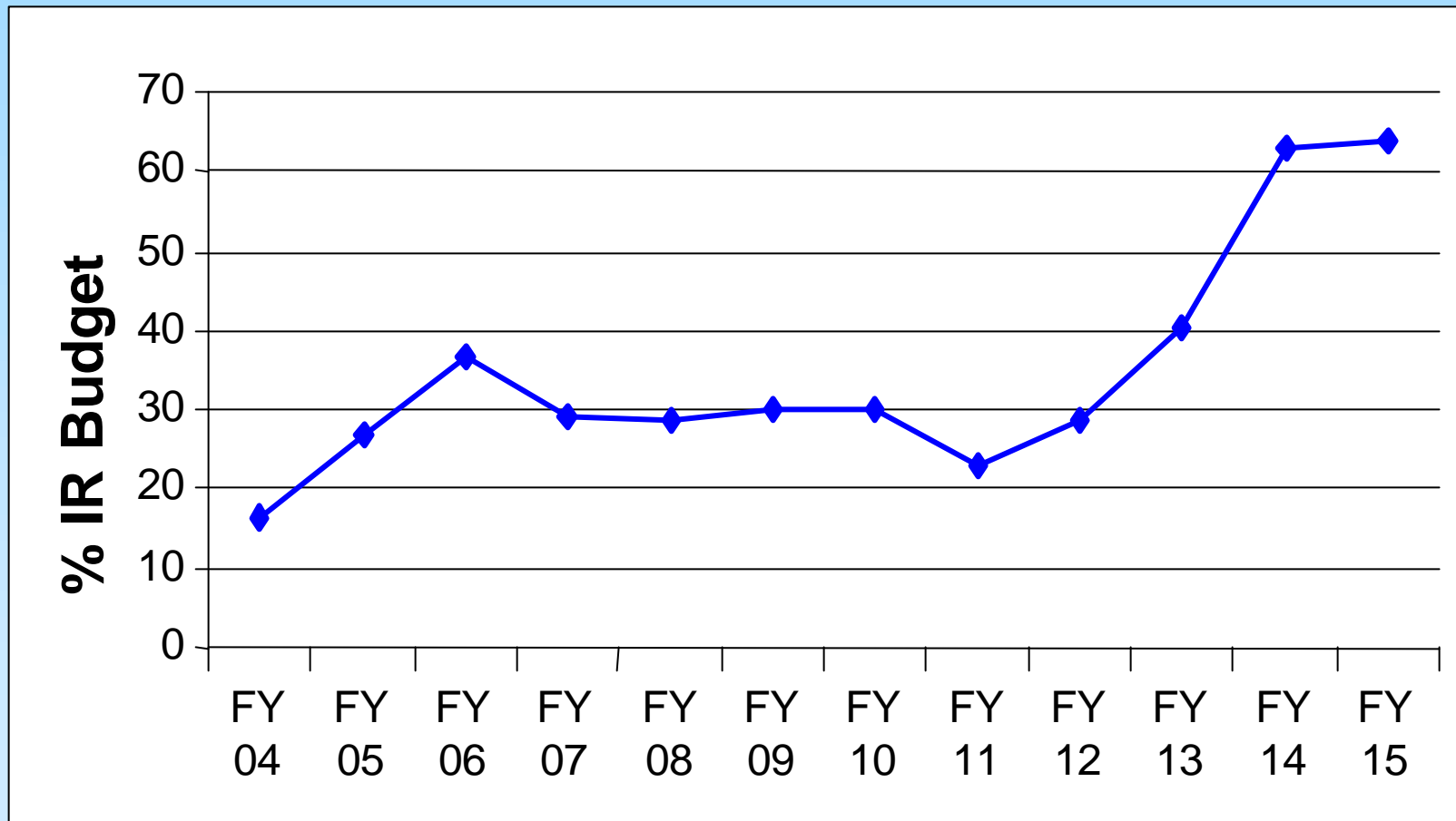
- Members: NAVFAC HQ & EFD/As, NFESC, HQMC
- Developed guidance documents:
  - Guidance for Optimizing RAO – April 2001
  - Guide to Optimal Groundwater Monitoring – January 2000
  - Guidance for Optimizing FS-RD – Final Draft under review at HQ,CNO, ASN, IR Managers – Final: May-June 2004
  - Guidance for Documenting SC Milestones – 3rd Draft under review – Final: June-July 2004
- Navy RAO/LTM Web page
  - [www.enviro.nfesc.navy.mil/erb/](http://www.enviro.nfesc.navy.mil/erb/)  
(Navy Support, Work Groups, RAO/LTM)

# Guidance Documents and IR Program Phases



# RAO/LTMgt as % of DON IR Budget

(ER,N + BRAC) (NORM Data September 2003)



# Remedial Action Operation (RAO) Phase



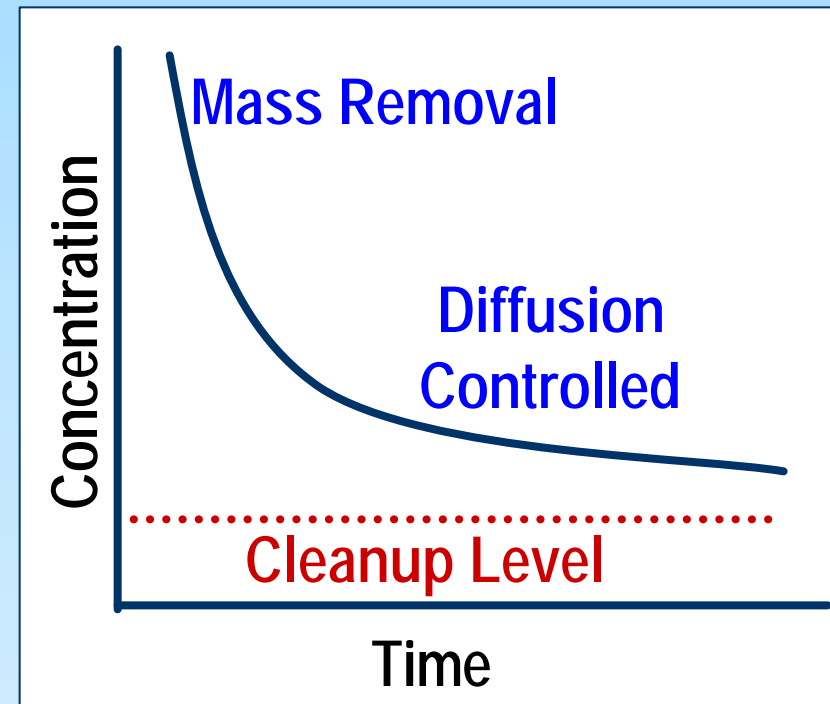
- Perform operation, maintenance, and monitoring
- Conduct routine sampling and analysis
- Prepare monitoring reports
- Evaluate performance against cleanup standards / goals
- Conduct evaluation / optimization

# RAO Optimization Process from Guidance



## Process Elements

1. Review & Evaluate RA Objectives & Conceptual Site Model (CSM)
2. Evaluate Remediation Effectiveness
3. Evaluate Cost Efficiency
4. Identify Remediation Alternatives
5. Develop & Prioritize Optimization Strategies
6. Prepare Optimization Report
7. Implement Optimization Strategy

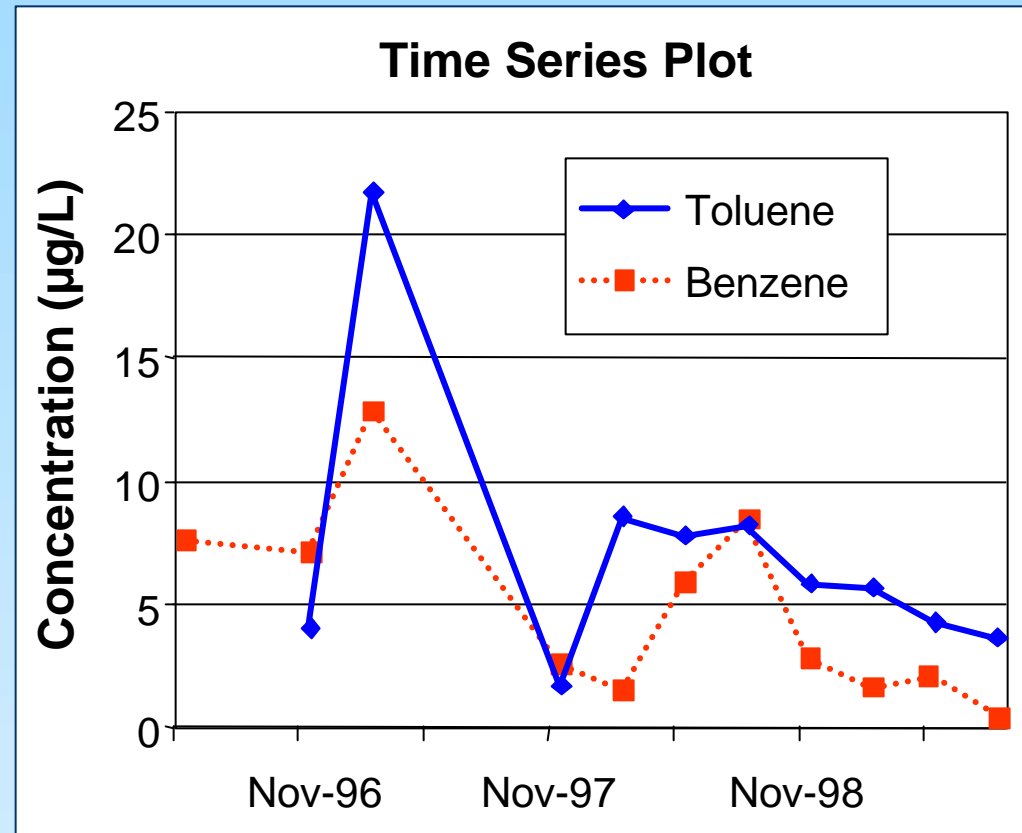


# LTM Optimization Process from Guidance



## Process Elements

1. Program goals
2. Monitoring point locations
3. Monitoring frequency
4. Monitoring parameters
5. Sample collection methods
6. Data evaluation and presentation
7. Regulatory acceptance



# Guidance for Optimizing Remedy Evaluation, Selection and Design



- Key concepts
- Review / update conceptual site model
- Identify remedial action objectives
- Identify target treatment zones - Treatment Train
- Develop remedial alternatives and life-cycle cost
- Develop performance objectives
- Optimization and exit strategy

# From Guidance: Considerations for FS, ROD, and RD



- Feasibility Study

- Conceptual site model; remedial action objectives; detailed analysis of alternatives; life cycle

- ROD

- Flexible, smart, or performance-based ROD
  - Allow adjustments and modifications; flexibility in technology transition

- Remedial Design

- Life cycle design; treatment train
  - General Strategies: equipment lease, mobile systems, intermittent operation, process control options, O&M plans

# Optimization Policy



- Draft optimization policy under review by IR Managers and others. Final due May-June 2004.
- Optimization required for all remediation response actions
- Started with top 20% most costly operating remediation systems in FY-03 Spring budget guidance
- 3rd Party Evaluations
  - NFESC or EFA/D in-house technical support, or independent contractor
- Track progress within NORM

# Future Optimization Tracking in NORM



- No current systematic way to track optimization efforts
- NAVFAC HQ responsible for reporting progress on implementing optimization practices
- New NORM module to track optimization efforts through all phases of optimization (FS, RD, RAO, LTMgt)
  - Update information semi-annually
  - Next release NORM 4.6
    - New NMCI-approved version
    - Tutorial will be available within NORM

Optimization View

Round:

1

Phase:

2

Study Name:

NFESC Tiger Team

Study Description Details:

text here

Study End Date:

1/1/2001

Study Cost in Dollars:

\$111

Implementation Cost:

\$111

Implementation Type:

Actual

Potential Cost Avoid:

\$111

Act Cost Avoid:

\$111

Persons of Contact:

Name	Phone	Email
▶ name her		email@here.mil

Add New

Edit

Delete

Recommendations of Study:

recommendations here

Actions Taken on Recommendations:

actions take here

Save

Cancel

18

# New P&T Requirements



- NAVFAC budget guidance notes concern with P&T systems meeting remediation objectives – DoD IG and DON optimization workgroup documents
- Optimization Policy requires HQ approval for installing new P&T systems. Provide to HQ:
  - Summary of site background
  - Conceptual site model
  - Remedial action objectives
  - Listing of technologies screened for the site
  - Summary of alternatives analysis
  - Justify P&T as most appropriate remedy
  - Life cycle cost analysis (net present value [NPV] and total site cost)
  - Exit strategy to meet Remedial Action Objectives/Site Closeout

# Key Points



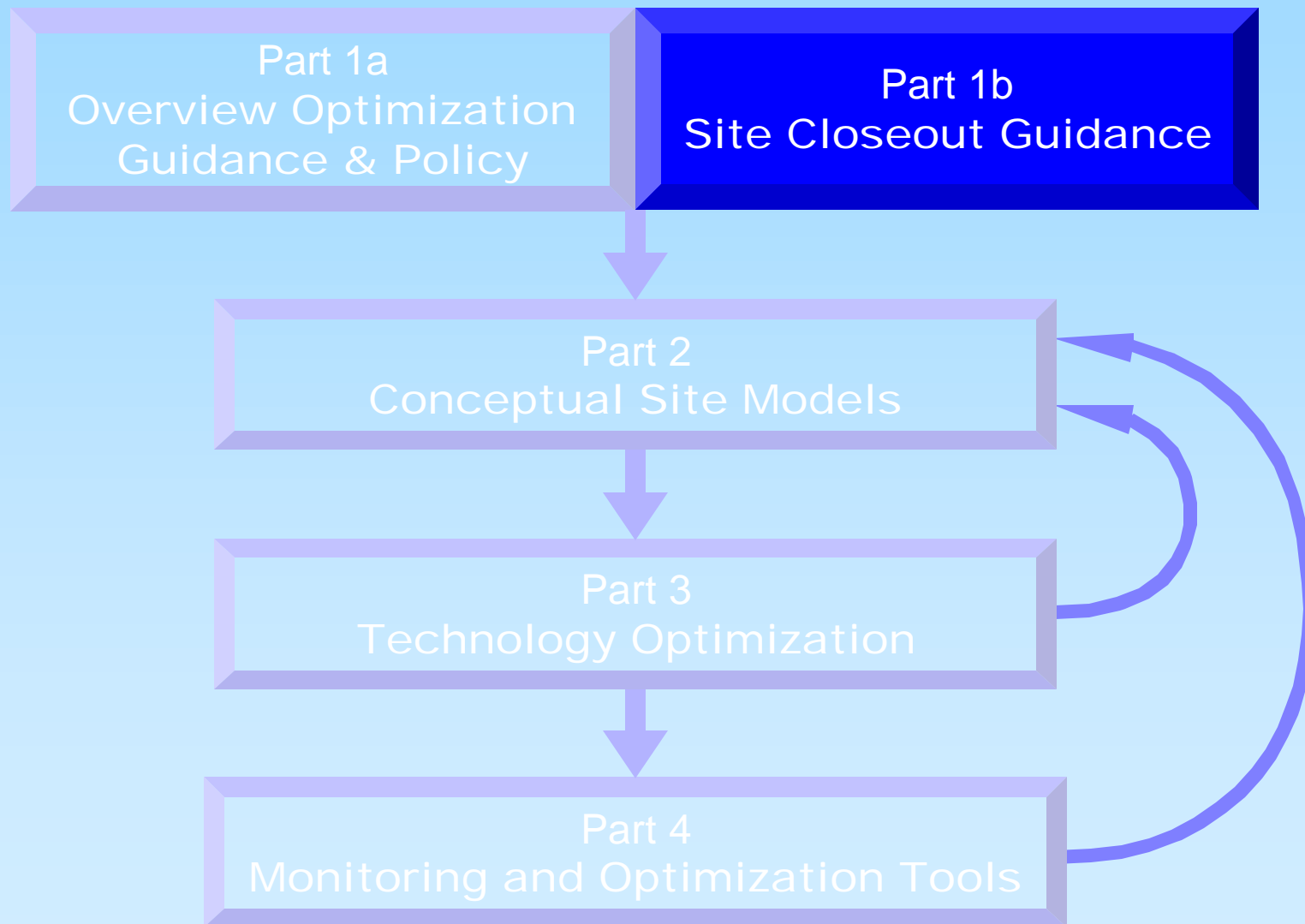
- Navy/Marine Corps policy requires continual optimization of all response actions at IR and Munitions Response (MR) sites

- Refer to Navy guidance documents developed by the Workgroup for specific optimization procedures during

FS-RD ----- RAO ----- LTMgt

- Track/report the effectiveness of optimization efforts for all sites in NORM
- Minimize or eliminate the use of P&T

# RITS Spring 2004: Optimization of Remedial Actions



# Presentation Overview



## •Background

- PA/SI and RI/FS Phases – NFA Documentation
- RIP Milestone, Requirements & Challenges beyond RIP
- RAO and RA Completion Report
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- SC signifies that:

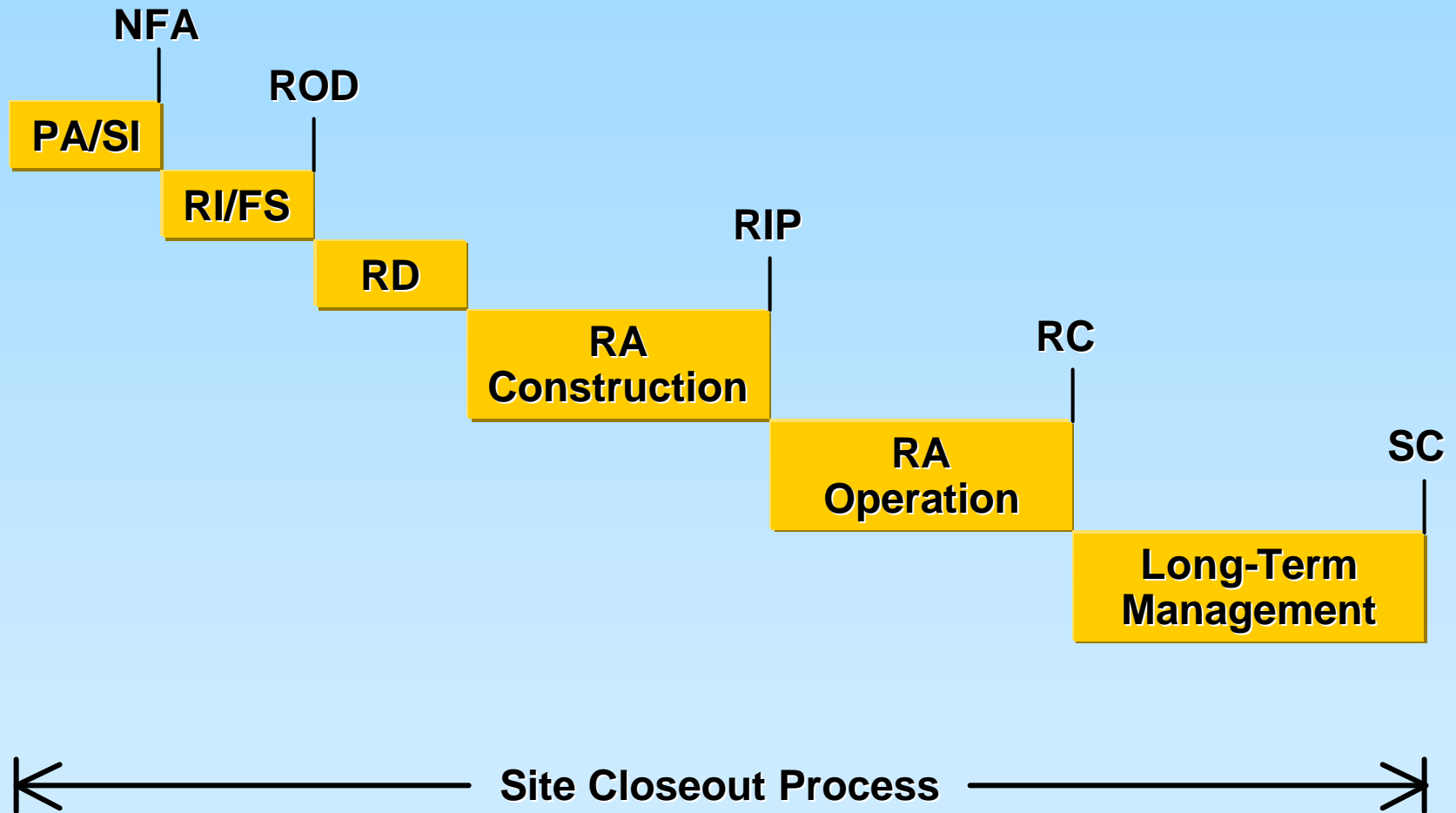
**DON has completed active management and monitoring at an environmental restoration site, and no additional environmental restoration funds are expected to be expended**

# Why The Need For SC Guidance?



- ER,N Defense Planning Guidance goals are for RIP/RC  
*e.g., 100% high relative risk sites RIP/RC by the end of 2007*
- Requirements to reach site closeout extend beyond RIP and raise new issues and challenges
- Cleanup Program is progressing
  - Achieve Remedy in Place (RIP)
  - Identifying Requirements Beyond RIP
  - Complete Cleanup (RC) and Closeout Sites (SC)
- Need proper documentation of Site Closeout to avoid future re-openers

# IR Program Phases

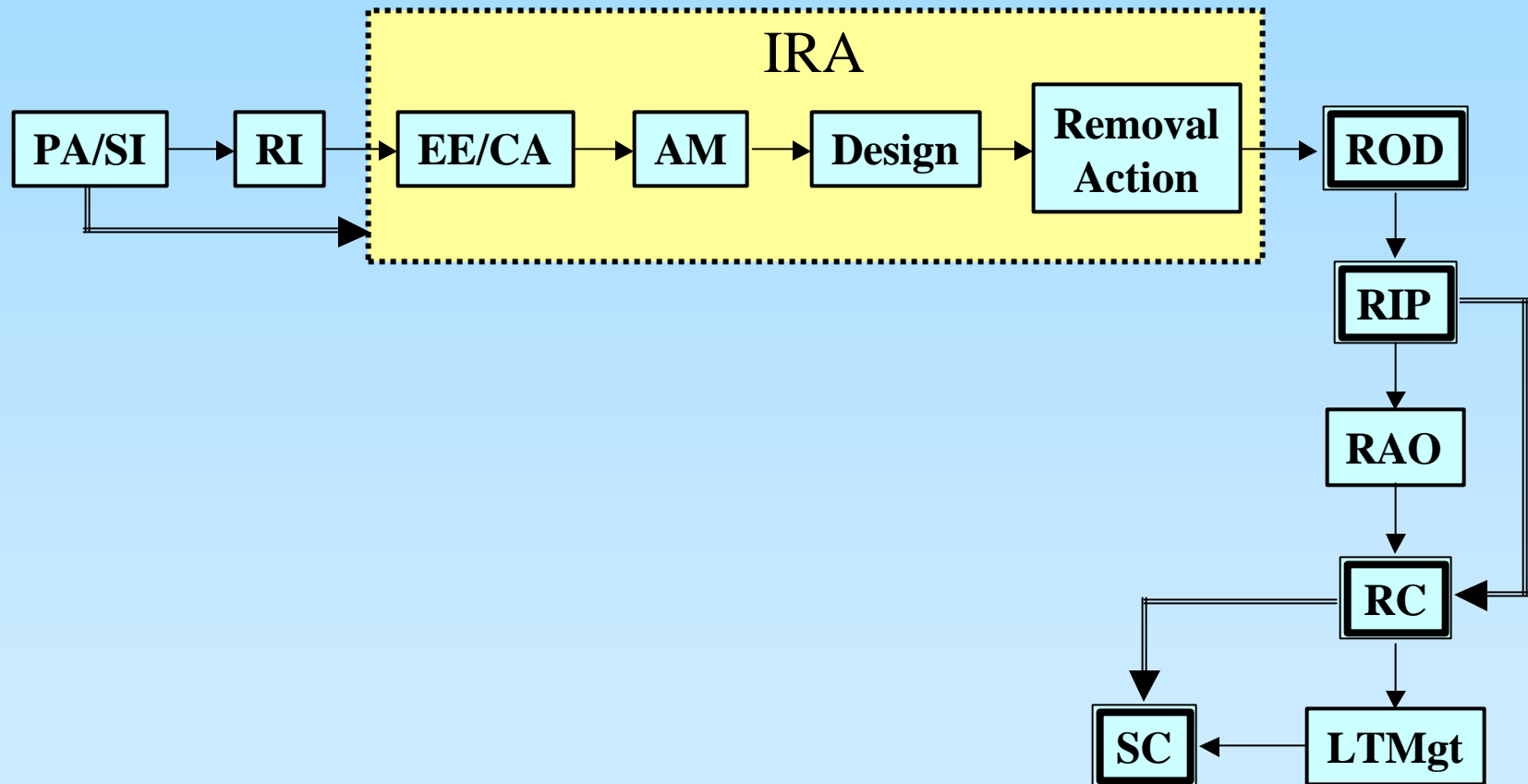


# Milestone Definitions



- **No Further Action (NFA)** – Signifies that site does not pose a significant threat to human health and the environment
- **Record of Decision (ROD)** – Documents remedial action for site or operable unit (OU)
- **Remedy In Place (RIP)** – Signifies completion of RA construction and that the remedy is functioning as designed
- **Response Complete (RC)** – Signifies that cleanup goals have been met
- **Site Closeout (SC)**

# IR Program Phases with Removal Action



# DON SC Guidance Development



- Need consistent DON process for documenting SC
- DON Optimization Workgroup is developing this document
- Draft under review, Final due June-July 2004
- Goal: Develop a brief document to identify necessary reports / letter reports to make sure site closeout is not disputed in future when:
  - RPM or regulatory point of contact (POC) changes
  - Program changes – e.g., ER,N to BRAC
- Review all existing SC guidance from regulatory agencies

# DON SC Guidance Development (cont.)



- Identify DON specific documents
- Applicable for CERCLA, RCRA, and UST
- Future Web page on the NFESC ERB homepage — will include templates, sample letters, reports, etc.
- Update CECOS course

# DON SC Guidance Development (cont.)



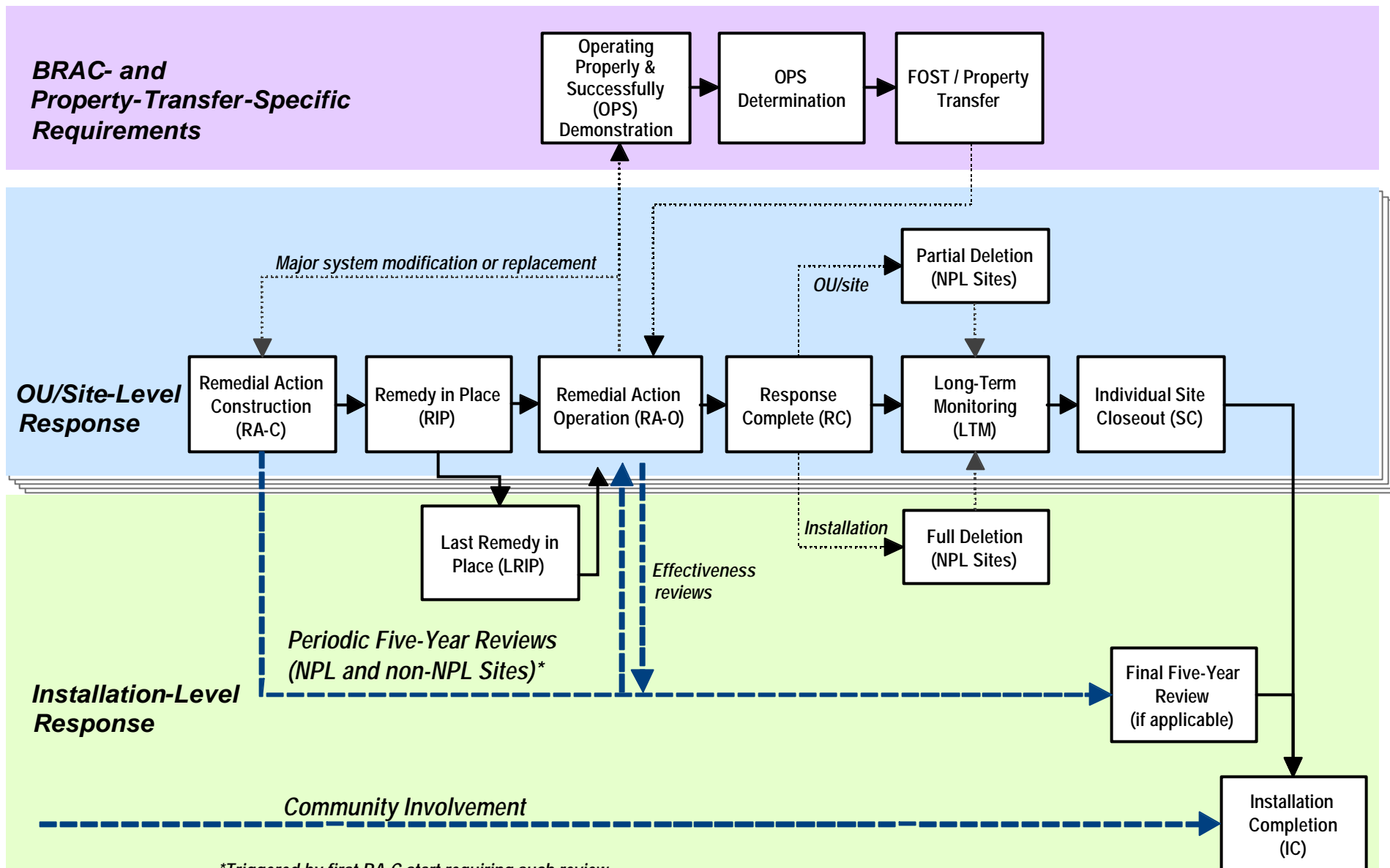
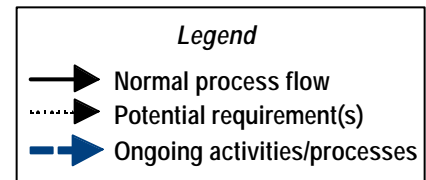
## •SC Milestone Documents

- PA/SI      NFA concurrence letters
- RI/FS      NFA sites included in ROD
- RAO        Remedial Action Completion Report
- LTMgt      LTMgt Completion Report



- National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR 300
- OSWER Directive "Closeout Procedures for NPL Sites" January 2000
- Air Force "*The Environmental Site Closeout Process*" [September 1999]
- Navy RAO/LTM Web page
  - [www.enviro.nfesc.navy.mil/erb/](http://www.enviro.nfesc.navy.mil/erb/)  
(Navy Support, Work Groups, RAO/LTM)

Figure 3.0. General Environmental Site Closeout Process (CERCLA)



\*Triggered by first RA-C start requiring such review

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# Preliminary Assessment / Site Inspection (PA/SI)



- Evaluate release of hazardous substances
- Based on limited data, determine if site poses a threat to human health and the environment
- If PA recommends further investigation, SI is performed
- SI typically determines contaminants and receptors
- Data used to calculate Hazard Ranking Score (HRS)
- RI/FS sites identified
- NFA sites identified

- Site Closeout for NFA sites
- Concurrence letters for PA/SI Sites
  - RPM, Installation, federal / state regulators
  - Administrative Record, Site File
- SC Guidance appendix has several examples

# Example NFA Concurrence Cover Page

# Example NFA Concurrence Letter

10/03/01

## DTAWS CLOSE-OUT DOCUMENTATION MARINE CORPS BASE, QUANTICO, VIRGINIA

This document presents the Desktop Audit with Sampling (DTAWS) Close-Out Documentation for six DTAWS sites at the U.S. Marine Corps Combat Development Command (MCCDC) located in Quantico, Virginia. This document meets the Federal Facilities Agreement (FFA) requirement for final close-out of the specified sites. This document was prepared for the Engineering Field Activity Chesapeake (EFACHES) under the Comprehensive Long-Term Environmental Action Navy (CLEAN), Contract Number N62472-90-D-1296, Contract Task Order (CTO) 0305.

The objective of the DTAWS investigation is to evaluate and document whether former operations at the identified sites have resulted in a release of hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents at concentrations which may be of concern to human health and the environment. The DTAWS process involved obtaining and evaluating all accessible documentation including environmental reports, facility drawings, personnel interviews, aerial photographs, and searching MCCDC Natural Resources and Environmental Affairs (NREA) records. Based on the available documentation, the QPMT determined No Further Action was appropriate for the six DTAWS sites listed below without the necessity for performing a field investigation that typically includes multimedia sampling and analysis. The conclusions documented herein represent the results of the DTAWS investigation of available information for the following sites:

- Site 42 (CA-25), Mainline Sewage Treatment Plant Accumulation Area
- Site 73 (CA-45), Murphy Demo Accumulation Area
- Site 89 (M-15), South Coal Yard
- Site 90 (M-16), North Coal Yard
- Site 92 (M-20), Building 3063 Abandoned Degreaser
- O-07, Building 3220 Oil/Water Separator

We, the undersigned members of the QPMT, have reviewed the information contained in Table 1 of Attachment A and agree with the conclusions presented.

EFA CHESAPEAKE  
WASHINGTON, D.C.

VIRGINIA DEQ  
RICHMOND, VIRGINIA

US EPA REGION III  
PHILADELPHIA, PENNSYLVANIA

MCCDC QUANTICO, NREA BRANCH  
QUANTICO, VIRGINIA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

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4WD-FFB

OCT 04 1995

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Commanding Officer,  
Southern Division, NAVFACENGCOM

P.O. Box 190010  
North Charleston, South Carolina 29419-9010

SUBJ: Concurrence with July 1995 Final Preliminary Site Characterization (PSC)  
Report for Site 5 (Borrow Pit), Naval Air Station (NAS) Pensacola, Florida  
EPA Site ID No.: FL9170024567.

Dear Mr. Hill:

The U.S. Environmental Protection Agency (EPA), has reviewed the Site 5 (Borrow Pit) PSC report, concurs with the Navy's recommendation for no further investigation, and accepts this document as final.

If you have any questions please contact me [REDACTED]

Sincerely,

[REDACTED]  
Remedial Project Manager,  
Federal Facilities Branch

CC: [REDACTED]

# Remedial Investigation / Feasibility Study (RI/FS)



- Determine nature and extent of contaminants
- Innovative site characterization through Triad Approach
  - Systematic planning
  - Dynamic work plans
  - Real-time measurement technologies
- Conduct risk assessment
- Conduct treatability studies to determine feasibility and design
- Conduct detailed analysis of alternatives
- Use nine evaluation criteria to identify preferred alternative
- Identify NFA sites

# Documentation of SC Milestone for NFA Sites from RI/FS



## Record of Decision

- ROD for NFA sites
  - Statutory Determination: No remedial action is necessary to ensure protection of human health and the environment
  - Main items in Decision Summary – site history, community participation, site characteristics, current and future land use, site risks
- RPM may decide to include NFA sites from PA/SI
  - Provides an additional level of concurrence
  - Additional cost

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# Remedy In Place (RIP)



- For remedies not requiring RAO or LTMgt phases, SC milestone is complete after RIP
  - Need RA Completion Report to document completion
- For remedies requiring RAO and/or LTMgt, need to conduct pre-final inspection of RA construction
  - Pre-final inspection
  - Develop a punch list (those items that need to be corrected or not in accordance with design specification)
  - Punch list items should be corrected before the final inspection

# Remedy In Place (RIP)



- Conduct Final Inspection of the RA Construction
  - RPM/BEC, ROICC, activity personnel & contractor
  - Check off the items from the punch list that have been corrected
    - RPM's responsibility
  - RPM determines to what degree the work (construction) is considered complete
  - Remedy must be operational and functional
  - Ensure that terms of the contract are met and that the work plan is followed

# Remedy In Place (RIP)



- Conduct technology "shakedown" to allow minor modifications to the remedy in order to ensure that it is operating as designed
- Prepare Final RA Operation Plan
  - Operation maintenance and monitoring (OM&M) Plan
  - Sampling & Analysis Plan
- Optional – Prepare Interim RA Completion Report

# Requirements Beyond RIP



- Operation and maintenance of cleanup systems
- Implementing/monitoring LUCs
- Performance reviews for cleanup systems
- Cleanup system modifications/upgrades
- Cleanup system/monitoring well decommissioning
- Community involvement
- Operating Properly & Successfully (OPS)
- Findings of Suitability to Transfer (FOST)
- Deletion from NPL – preliminary and final closeout reports
- Long-term management/monitoring

# Challenges Beyond RIP



- Ineffective cleanup systems
- Documentation and concurrence
- Leaving contamination in place
- Community concerns about process
- Security/integrity of cleanup systems
- Effectiveness of LUCs
- Future changes in land use and continued protectiveness
- Discovery of additional contamination

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# Remedial Action Operation (RAO)



- Perform system operation, maintenance, and monitoring
- Perform RAO optimization
  - Follow NAVFAC's Guidance for Optimizing RAO – April 2001
- Implement optimization recommendations
  - Non-significant change: memo to file
  - Significant change: Explanation of Significant Difference
  - Fundamental change: ROD amendment
- RAO is complete once all cleanup goals are achieved
- Prepare Remedial Action Completion Report (RACR)

# Remedial Action Completion Report



- Major document for SC Milestone
  - Site / OU Background
    - History, RI/FS findings, ROD, remedy description, etc.
  - Chronology of events
  - Document that the cleanup standards of the RA have been met
  - Future actions / LTMgt
  - References

# Remedial Action Completion Report (cont.)



- Revise draft RA Completion Report
  - Incorporate U.S. EPA/state reviews and comments
- U.S. EPA issues letter accepting RA Completion Report
  - Signed by designated regional official (U.S. EPA branch chief)
- Decommission RA equipment and wells as appropriate
- Response Complete milestone
- SC milestone complete if LTMgt phase not required

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# Long-Term Management (LTMgt)



- The period of site management (including maintenance, monitoring, record keeping, Five-Year Reviews, etc.) initiated after the remedial action objectives have been met (i.e., after Response Complete)
- Contaminants remain at site at levels that do not allow unlimited use / unrestricted exposure
- Monitor to determine continued effectiveness of remedy
- Implement LUCs
- LTMgt phase may include Long-Term Monitoring (LTM)

- Review LTM Requirements Periodically
  - Optimization strategies: Follow NAVFAC's Guide to Optimal Groundwater Monitoring – January 2000
  - Evaluate remedy function (is it still protective of human health and the environment?)

# LTMgt Completion Report



- Report to document completion of LTMgt
  - No further LUCs to implement
  - No further monitoring to conduct
- Briefly describe
  - Remedial actions taken at the site
  - Achievement of remediation goals
  - Management of LUCs
  - Monitoring results
- Need concurrence from regulators
- Documents SC milestone completion

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# Site Closeout for RCRA Corrective Action



## •RCRA Phases are similar in scope to CERCLA Phases

RCRA	CERCLA
RCRA Facility Assessment (RFA)	Preliminary Assessment Site Inspection (PA/SI)
RCRA Facility Investigation (RFI)	Remedial Investigation (RI)
Corrective Measures Study (CMS)	Feasibility Study (FS)
Draft Permit Modification	Proposed Plan (PP)
RCRA Permit	Record of Decision (ROD)
Corrective Measures Implementation (CMI)	Remedial Design (RD)/ Remedial Action (RA)

# Site Closeout for RCRA Corrective Action (cont.)



- Instead of ROD, RCRA permit issued by State or U.S. EPA
- RA & LTMgt Completion reports
- RCRA terminology: RA completion with controls or RA completion without controls
- NFA sites identified in the permit
- Need permit modification for Site Closeout

# Site Closeout for UST Sites



- Corrective action are led by state / local agency
- Documentation requirements are simpler than CERCLA or RCRA
- Corrective action plan (CAP), implementation, and periodic monitoring report
- May need confirmation monitoring
- Concurrence letter from regulators

# Presentation Overview



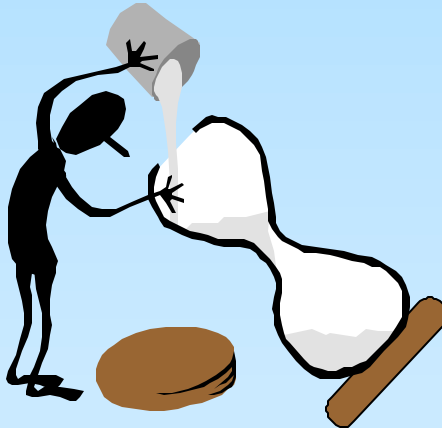
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# CERCLA Five-Year Reviews



- Statutory Reviews – Contaminants left on-site after RC
- Policy Reviews – ongoing remedial action will allow unlimited use and unrestricted exposure
- DON Policy for CERCLA Five-Year Reviews – Nov. 2001
- NAVFAC responsible for Five-Year Reviews as long as cleanup is ongoing at an installation
- After the last site reaches RC milestone, NAVFAC will conduct one Five-Year Review, then turn the responsibility over to the installation

# Five-Year Review Report

- Five-Year Review Report should:
    - Clearly state whether the remedy is expected to be protective
    - Document any deficiencies identified during the review
    - Recommend specific actions to ensure that a remedy is protective
  - Report should provide support information for LTMgt Completion Report
- 
- When does the clock start ticking for Five-Year Reviews?
    - Normally on the date of on-site mobilization, or ROD signature date for MNA

# NPL Deletion – Full or Partial



- RPM decides to seek full or partial deletion – partial deletion may facilitate parcel transfer
- Must have RACRs for all IR sites for full deletion
- Prepare Final Closeout Report (FCOR)
- Need a letter of concurrence from state
- U.S. EPA region prepares a Deletion Docket
- U.S. EPA prepares the Notice of Intent to Delete
- Sabana Seca first Navy installation completely deleted from the NPL

# NPL Deletion – Final Closeout Report



- When last IR site reaches RC at an NPL Installation, prepare Final Closeout Report (FCOR)
  - The FCOR covers entire installation (site/OU, including all operable units)
  - Consolidates the results of all previous site/OU activities
  - U.S. EPA Headquarters and the state review and comment prior to final approval
  - U.S. EPA regional coordinators review and sign the FCOR
  - Forward an approved copy to U.S. EPA headquarters
  - File the FCOR in the Administrative Record

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# Summary



- Completion of SC milestone may occur at different stages of the ER process
- Proper documentation of SC milestones is essential
- NFA sites from PA/SI and RI/FS need documentation – concurrence letters, ROD
- Remedial Action Completion Report is the major tool to document SC milestone for site/OU's requiring remedial action
- LTMgt Completion Report required to signify no further requirements for LUCs or monitoring
- RCRA sites have similar SC documents, but also need a permit modification for site closeout
- For UST sites, states issue concurrence letters
- Five-year review reports and NPL deletion as supporting documents